

WHAT IS CLAIMED IS:

1 1. A rotary shaft axial elongation measuring method for  
2 measuring an axial elongation of a rotary shaft,  
3 comprising the steps of:

4 providing a reference mark and a measuring mark on a  
5 rotational surface of said rotary shaft, said measuring mark  
6 being arranged inclinedly relative to an axial direction of  
7 said rotary shaft;

8 arranging a sensor fixedly so as to oppose the  
9 rotational surface of said rotary shaft, said sensor  
10 generating pulses upon passing of said marks following a  
11 rotation of said rotary shaft; and

12 measuring the axial elongation of said rotary shaft from  
13 a change in an interval of the pulses generated by said sensor  
14 upon passing of said reference mark and measuring mark.

1 2. A rotary shaft axial elongation measuring device for  
2 measuring an axial elongation of a rotary shaft, comprising:

3 a reference mark and a measuring mark provided on a  
4 rotational surface of said rotary shaft, said measuring mark  
5 being arranged inclinedly relative to an axial direction of  
6 said rotary shaft;

7 a sensor arranged fixedly so as to oppose the rotational

8 surface of said rotary shaft, said sensor generating pulses  
9 upon passing of said marks following a rotation of said rotary  
10 shaft; and

11 a data processing part for measuring the axial  
12 elongation of said rotary shaft from a change in an interval  
13 of the pulses generated by said sensor upon passing of said  
14 reference mark and measuring mark.

1 3. A rotary shaft axial elongation measuring device as  
2 claimed in Claim 2, wherein said reference mark and measuring  
3 mark are two marks provided such that an interval between them  
4 in a circumferential direction of said rotary shaft differs  
5 according to an axial directional position of said rotary  
6 shaft.

1 4. A rotary shaft axial elongation measuring device as  
2 claimed in Claim 3, wherein said two marks are two grooves  
3 provided in a turned V shape.

1 5. A rotary shaft axial elongation measuring device as  
2 claimed in Claim 3, wherein said two marks are two wire  
3 members fitted in a turned V shape.

1 6. A rotary shaft axial elongation measuring device as

2 claimed in Claim 2, wherein said measuring mark is a groove  
3 provided in a spiral shape.

1 7. A rotary shaft axial elongation measuring device as  
2 claimed in Claim 2, wherein said measuring mark is a wire  
3 member fitted in a spiral shape.

1 8. A rotary shaft axial elongation measuring device as  
2 claimed in any one of Claims 2 to 7, wherein said sensor is  
3 any one of a capacitance type gap sensor, an eddy current gap  
4 sensor and a photoelectric sensor.